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ABSTRACT

This study, part of a larger effort to assess the effects of the Anthropology Curriculum Study Project course, "Patterns in Human History", was designed to assess the learning dynamics involved in a short lesson sequence from Part I on the concept of social position. Random structured samples of 82 project and 82 control students were selected. The research strategy employed was derived from Gagne's theoretical model of learning in which the attainment of any complex intellectual task depends upon the prior learning of a number of simpler tasks, and involved the following steps: 1) the terminal objective of the sequence was analyzed to identify an hypothesized hierarchy of simpler underlying tasks; 2) the Status Identification Test was constructed which contained one test item for each of the seven most complex underlying tasks, and two items representing the terminal objective of the sequence; 3) post-performance for each task was compared separately for a sample of project and control students; 4) the mean number of social positions identified was compared between samples; and, 5) performance configurations between samples were compared. The absence of significant performance differences on the two measures of the terminal objective indicated that the lesson sequence was unsuccessful. Differences were detected, however, on several of the underlying tasks and recommendations were made from analyses of these differences. (JLB)

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The Use of a Criterion-Based Performance Test in Revising a Social Studies Curriculum

Morton S. Tenenberg[1]

The Setting

The Anthropology Curriculum Study Project (ACSP) is a national curriculum development project operating under the auspices of the American Anthropological Association with financial support from the National Science Foundation. Its activities have culminated in the production of a semester course for high school students, PATTERNS IN HUMAN HISTORY, currently being published by MacMillan Co.

Various portions of PATTERNS were field tested in numerous schools throughout the United States. A trial version of the whole course was taught to approximately 1200 tenth grade students in Stockton and Oakland, California, during the spring, 1969, school semester. The study reported here is one of several carried out during this implementation period as part of a comprehensive effort to assess the effect of PATTERNS on students and teachers.[2] Other components of the investigation included studies of student acquisition of course-related concepts and data analysis skills, and the first known ethnographic study of an American high school by a participant observer trained in anthropological investigation.

The recommended lessons for PATTERNS IN HUMAN HISTORY are presented in integrated sequences in a detailed Teaching Manual. Lessons are organized around "Topics" or "Problems," which are in turn organized into the four large main divisions of the course:

PART I - Studying Societies
PART II - The Origins of Humanness
PART III - The Emergence of Complex Societies
PART IV - Modernization and Traditional Societies

The study reported here was designed to assess the impact of a short lesson sequence from PART I which had not previously been tried out during earlier field testing. The function of the sequence is to teach students the concept "social position" so that, subsequent to the lessons, they can without assistance identify the social positions among a group of people they have not previously studied by reading a descriptive anecdotal incident about the group.

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[2]ACSP research was originally designed to cover a three-year period. Unfortunately, exigencies in the availability of funds necessitated termination of activities at the end of one year. The complete research plan, which included investigation of the efficacy of various types of in-service training for teachers and the relationship of teaching style to learning outcome, is contained in Parson, T. W. and Tenenberg, M. S., "Conceptual Structure for Research on Curriculum Implementation," a paper delivered at the 1970 Annual Meeting of AERA.

The curriculum designers of PATTERNS were not only interested in the learning outcomes of the sequence in question during the implementation period; they also desired information which would be of assistance in altering the lessons for commercial publication so that their potential effectiveness in an anticipated wide range of future settings might be enhanced. As a consequence, the focus of research into this portion of PATTERNS was that of investigating the dynamics of the learning involved. The fundamental question governing investigation was not "Does the sequence work?" but rather, "Why is it effective when it 'works' and why is it not effective when it does not 'work'?" Answers to the latter question could contribute directly to recommendations for altering fairly specific components of the lessons under study to increase their effectiveness. In contrast, answers to the question "Does it work?" appeared to offer little in the way of potential recommendations for re-design beyond "It worked--keep the sequence as it is" or "It didn't work--change it."

Research Strategy

A general strategy for curriculum research which appeared particularly suited to the purpose indicated here was derived from investigations by Gagné, Wiegand, Gibson, Coleman, and Okey appearing in Basic Studies of Learning Hierarchies in School Subjects (1970). These and other studies by Gagné and his associates are based upon a theoretical model of learning in which the attainment of any complex intellectual task depends upon the prior learning of a number of simpler tasks. The research strategy used in the present study consisted of these steps:

(a) Following procedures outlined by Gagné (1967), the terminal objective of the lesson sequence under study from PATTERNS was analysed to identify an hypothesized hierarchy of simpler underlying tasks.

(b) An assessment instrument (SIT) was constructed which contained one test item for each of the seven most complex underlying tasks and two items representing the terminal objective of the course sequence. The instrument consisted of a series of three written anecdotes about societal groups not studied in PATTERNS, each followed by fill-in type questions about the anecdotes. Answers to all items were scored as either "pass" or "not-pass."

(c) Post-performance for each task was compared separately for a sample of project and control students.

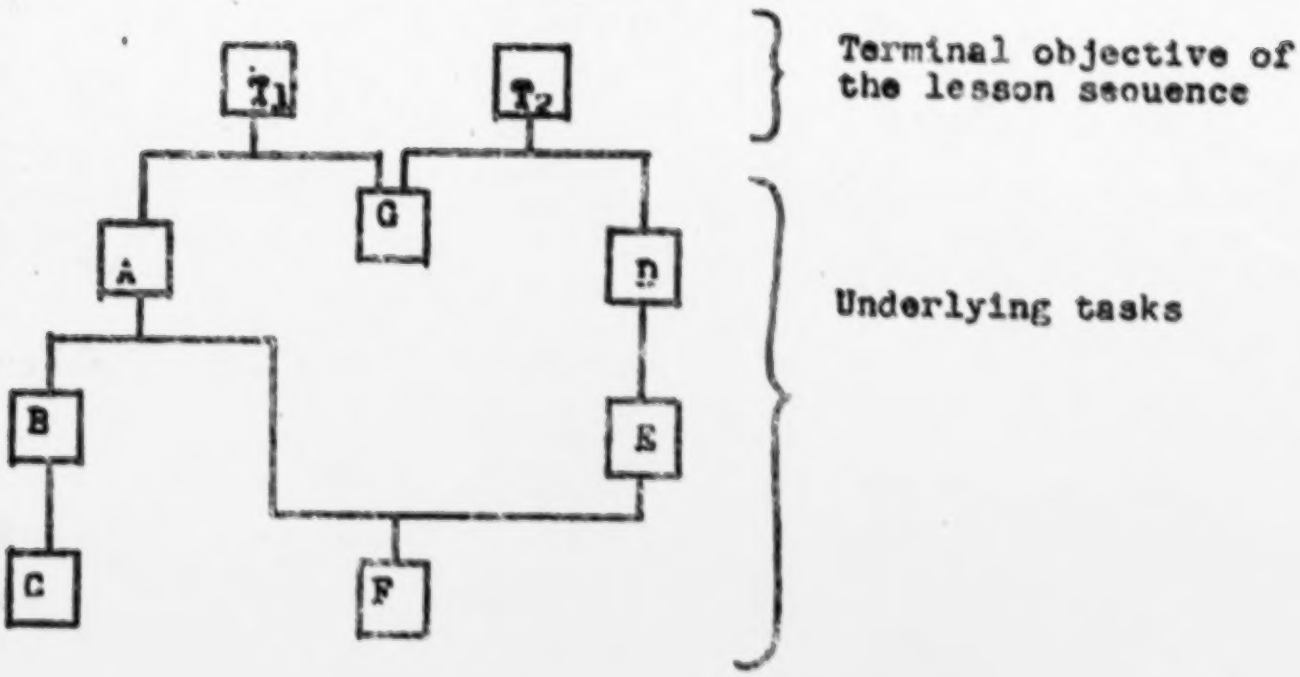
(d) The mean number of social positions identified in response to the specific test item asking for such identifications was compared for project and control samples.

(e) Performance configurations between project and control groups were compared. Pattern differences were interpreted as evidence of course effects. Specific recommendations for lesson revision were made in relation to these interpreted effects.

Terminal and Underlying Tasks

Figure 1 is a schematic representation of the hypothesized interrelationship among the tasks appearing in the SIT (Status Identification Test) instrument.

Figure 1. Schematic Representation of Tasks in SIT Instrument.



In Figure 1 the terminal objective of the lesson sequence under study is represented by boxes T_1 and T_2. Two test items were needed for this objective---one for situations in which the presented written anecdote contained evidence of negative sanctions being applied against a person or persons in the story and one for anecdotes in which no negative sanctions are evident. This difference in presented materials accounts for the two "chains" of underlying tasks in Figure 1---chain ABCFG and chain DEFG. In essence, in order to do Task T_1 successfully it was presumed that the student must have previously learned to do Tasks A, B, C, F, and G; in order to do T_2 successfully it was presumed the student must have previously learned to do Tasks D, E, F, and G.

Criterion Measures

Each response on the SIT was scored as either "pass" or "not-pass" depending on whether it met certain specified written criteria for that item. All tests were marked independently by two scorers in accord with the written criteria. Any differences were resolved through subsequent discussion between the scorers.

Total scores were not computed by summing the number of "pass" responses. In fact, total scores, as well as all other kinds of analogous measures for "overall" performance, were <u>not</u> computed! Such measures are antithetical to the nature of the analysis strategy employed. The concern here is with <u>patterns</u> of "pass" and "not-pass" performances; that is, configurations of which items are successfully carried out and which are not.

Project and Control Samples

From "pools" of classes taking the ACSP course and classes at the same schools taking other tenth grade world history offerings, random structured samples of 82 project and 82 control students were selected for inclusion in this portion of the ACSP research. Figure 2 summarizes various information regarding these samples.

Figure 2. Comparison of Information, Project and Control Groups Used in Analysis of SIT

Group	No. of teachers	No. of schools	No. of Pupils			Mean raw reading score*
			Stockton	Oakland	Total	
Project	6	4	42	40	82	53.91
Control	6	4	38	44	82	54.27

*Difference not statistically significant at $p \bar{>} .05$.

Statistical Analyses

For each task in the SIT instrument the ratio of "pass" answers to number of subjects was computed separately for project and control groups. Pearson's Chi-square (X^2) test for statistical significance was applied to the distributions of "pass" and "not-pass" responses involved and the resultant statistic was used as an indicator of the significance of the difference between ratios.

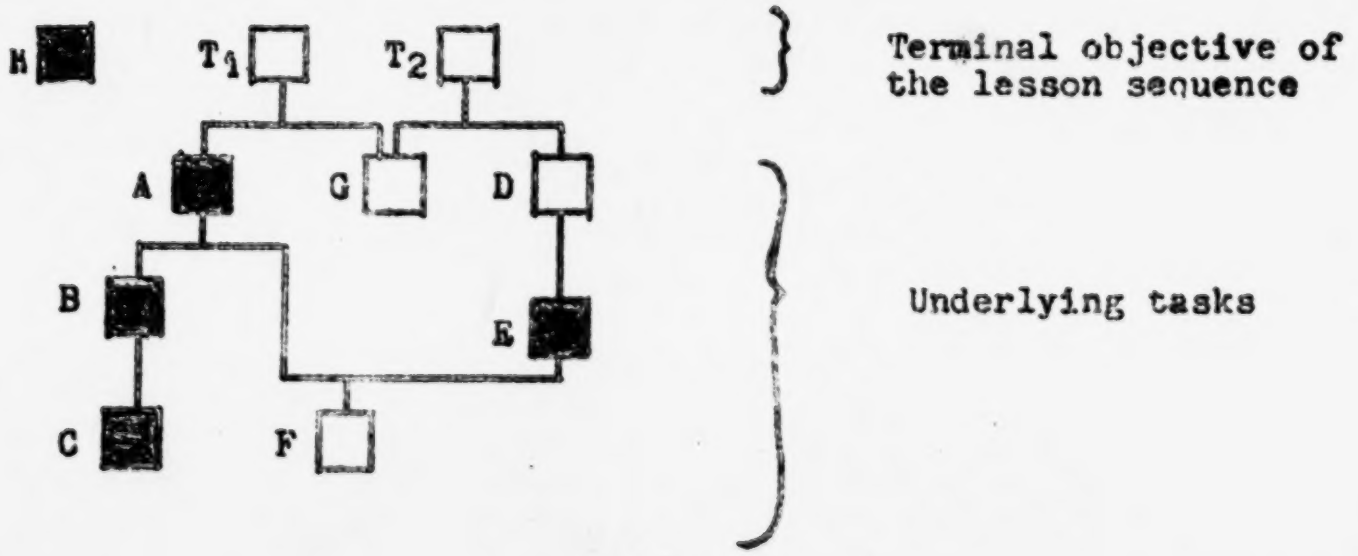
The mean number of social positions identified in response to the SIT item requiring such identification was compared for project and control classes through the use of one-way analysis of variance.

For all statistical tests the level of significance chosen was $p \bar{>} .05$.

Results

Results of the analyses are presented schematically in Figure 3.

Figure 3. Significant and Non-significant Differences in Performance between Project and Control Groups for SIT Tasks.



Box H in Figure 3 represents results from the analysis of variance of the mean number of social positions identified by project and control groups.

Interpretation and Recommendations

Interpretation of the performance comparison pattern shown in Figure 3 prompted several conclusions and recommendations for lesson revision. The scope of this paper precludes presentation of much of the detailed reasoning involved, since it would entail a close inspection and analysis of each of the SIT tasks.[3] It is hoped that these brief remarks will convey the essential character of the approach taken.

1. The absence of significant performance differences for item T_1 and T_2 indicates that the lesson sequence was not successful in accomplishing the objectives of the designers. T_1 and T_2, it will be recalled, represent the terminal objectives of the sequence under study.

2. Though the project group did not perform significantly better with terminal objective T_1, it did so with three of the underlying tasks (A, B, and C) presumed to underly successful attainment of T_1. A fourth task, represented by box G, was performed successfully by almost all project and control students. This left F as an underlying task in need of greater attention in the lesson sequence--a recommendation made to the designers.

The significantly better performance by the project group on tasks A, B, and C suggested further explanation for the lack of success of the lesson sequence: though many project students may have learned to perform tasks underlying T_1, they may not have been employing these sub-tasks in carrying out the terminal task (T_1). In other words, though they could do the right steps in isolation, they were using other procedures to carry out the terminal task. This interpretation explains an apparent contradiction--though project group did not perform any better than the control group on task T_1, it was able to identify a significantly greater number of social positions than the control group (box H in Figure 3). In short, many project students appeared to be using a "short-cut" method of identifying social positions which actually by-passed some of the process of anecdote analysis desired by the curriculum designers. The following recommendation was made: in re-designing the lessons the desired process of data analyses must be modelled in toto subsequent to the modelling of sub-processes and students must be given (a) opportunities to practice the terminal task in toto and (b) feedback regarding whether or not they used the desired sequence of steps.

3. Inspection of the performance comparison pattern for the task series presumed to underly T_2 (tasks D, E, F, and G) contributed additional evidence to the interpretations given above and led to similar recommendations. Note that the project group performed significantly better than the control group on task E but not on task D. In this case task E involved demonstrating that some given group in an anecdote (e.g., men, children) was expected to act in a particular way even though

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[3]The SIT instrument together with an analysis of the nature of each task and a detailed rationale for subsequent recommendations will appear in the final ACSP report currently being prepared for the National Science Foundation.

no overt sanctions (rewards or punishments) were evident in the anecdote. Task D is identical to E with one important exception: in D the student must identify a group for whom expectations exist, whereas in E the student is given the name of a group by the test item. Once again, students knowing how to carry out a subtask (E) may not have employed that procedure in carrying out a more complex task (D).[4] The recommendation was made that task T_2 be modelled in toto within the lesson sequence under study and that students be given (a) opportunity to perform the task in toto and (b) feedback regarding whether or not they had used the desired steps. Further, it was recommended that more specific attention be given in the sequence to the process of determining whether a group of people are expected by others to act the way they are acting when the "others" express no overt sanctioning behavior.

Sequence Revision

In the main, the recommendations stemming from this portion of ACSP research were acted upon by the course designers in preparing PATTERNS for commercial publication. The approach taken in this investigation was somewhat different than that used in most evaluation studies in the areas of social sciences education. The degree of specificity regarding recommendations for lesson revision was deemed useful and desirable by ACSP staff members. The approach appears worthy of further study, employment, and refinement.

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[4]This interpretation is further substantiated by an examination of incorrect answers to items D, T_2, and T_1. Analysis of these answers is not presented here. In general, the responses given are of the type that would result from "short-cut" data analysis procedures.